

Amendment and Response under 37 C.F.R. 1.116

Applicant: Pere Obrador

Serial No.: 10/090,778

Filed: March 6, 2002

Docket No.: 10017906-1

Title: VIDEO TRANSCODER BASED JOINT VIDEO AND STILL IMAGE PIPELINE WITH STILL BURST MODE

REMARKS

The following remarks are made in reply to the Final Office Action mailed October 19, 2005, in which claims 1, 3-9, 11-17, 19, and 20 were rejected. With this Response, claims 3, 11 and 19 have been amended. Claims 1, 3-9, 11-17, 19 and 20 remain pending in the application and are presented for reconsideration and allowance.

Claim Rejections under 35 U.S.C. § 112

Claims 3, 4, 11, 12, 19 and 20 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the rejected claims depend from previously cancelled claims, and as such the claims are rendered indefinite.

Claims 3, 11 and 19 have been amended to depend from independent claims 1, 9 and 17, respectively. Accordingly, claims 3, 4, 11, 12, 19 and 20 no longer depend from previously cancelled claims, and withdrawal of the rejection under 35 U.S.C. §112, second paragraph, is respectfully requested.

Claim Rejections under 35 U.S.C. § 103

Claims 1, 6, 8, 9, 14, 15 and 17 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Wyman of record (U.S. 2003/0112347) in view of Voss et al. of record (U.S. 2003/0147640) and Ueno et al. of record (U.S. Patent No. 5,436,665).

Wyman is alleged to disclose substantially the same: method for concurrently processing digital video frames and high resolution still images in burst mode, as presented in independent claim 1; joint video and still image pipeline for a video camera system, as presented in independent claim 9; and computer readable medium providing instructions for concurrently processing digital video frames and high resolution still images in burst mode, as presented in independent claim 17. In particular, Wyman is alleged to disclose substantially the same one or more image sensors (i.e., 103 of Fig. 2) capable of concurrently acquiring regular sized video frames and high resolution still image frames (referencing page 3, section [0028]); a sensor controller capable of storing the regular sized video frames and the high resolution still image frame into a memory (referencing page 3, section [0028], page 7, section [0059], and 204 of Fig. 2); one or more processors (referencing page 3, section

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[0028], and Fig. 2) capable of concurrently processing the reduced size video frames and high resolution still image frames acquired, wherein the reduced size video frames are processed using a video pipeline and the high resolution still image frames are processed using a high resolution still image pipeline, and wherein the high resolution still image frames are processed concurrently with the reduced size video frames, wherein the processing the high resolution still image frames includes processing the high resolution still image frames in real time (i.e., the continuous saving of video on a motion video medium is alleged to represent real time processing of the high resolution image frames, referencing page 1, section [008]); compressing the reduced sized video frames and the high resolution still image frames (referencing page 5, section [0042]); and wherein the processors are selected from a microprocessor, and application specific integrated circuit (ASIC), and a digital signal processor (i.e., 201 of Fig. 2).

Wyman is acknowledged as failing to disclose:

- (a) concurrently processing digital video frames and high resolution still images in burst mode, concurrently acquiring regular size video frames and high resolution still image frames in burst mode, and storing the regular size video frames and the high resolution still image frames acquired during the burst mode into a memory as claimed in claims 1, 9, and 17;
- (b) wherein the regular sized video frames are down sampled into reduced sized video frames, the reduced sized video frames having frame sizes smaller than the regular size video frames as claimed in claims 1, 9, and 17; and
- (c) upsampling the reduced video frames using motion estimation and information from the high resolution still image frames, as claimed in claims 1, 9 and 17.

Regarding item (a) above, Voss et al. is alleged to disclose a system and method for capturing and embedding high resolution still image data into a video data stream (referencing Figs. 1, 2a, 2b, and 4) and is alleged to teach the conventional processing and acquiring digital video frames/regular sized video frames and high resolution still image frames in burst mode, and storing the regular sized video frames and the high resolution still image frames acquired during the burst mode into a memory (referencing page 2, sections [0022], [0024], page 3, section [0036], [0037], page 4, section [0039]). The Office Action alleges one of ordinary skill in the art, having the Wyman and Voss et al. references at hand

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and the general knowledge of burst mode within digital still on video cameras, would have had no difficulty in providing the burst mode features in processing and storing video frames and high resolution still images concurrently as taught by Voss et al. for the joint video and still image pipeline system of Wyman for the same well-known capturing of high resolution still images while storing the video so that both the still image and the video images are captured concurrently without losing any information as claimed.

Regarding items (b) and (c) above, Ueno et al. is alleged to disclose a motion picture coding apparatus as shown in Fig. 1, and allegedly teaches the conventional use of an upsampler 35 for upsampling reduced video frames using motion estimation (i.e., 104 of Fig. 1) and information from high resolution still image frames (referencing Fig. 4), and downsampling regular size video frames into reduced sized video frames, wherein the reduced sized frames allegedly have frame sizes smaller than the regular sized video frames (referencing column 8, lines 28-45). The Office Action alleges one of ordinary skill in the art, having the Wyman, Voss et al., and Ueno et al. references at hand and the general knowledge of video motion estimation, would have had no difficulty in providing the upsampling of reduced sized video frames using motion estimation and information from the high resolution still image frames, and downsampling of regular sized video frames into reduced sized frames wherein the reduced sized frames have frame sizes smaller than the regular sized video frames, as allegedly taught by Ueno et al. as part of the video compression process within Wyman for the same well known compression of video for bandwidth reduction purposes as claimed.

The rejection of independent claims 1, 9 and 17 is respectfully traversed. Applicant respectfully submits that the references cannot support a *prima facie* case of obviousness.

Independent claim 1 describes a method for concurrently processing digital video frames and high resolution still images in burst mode. The method comprises: acquiring regular size video frames and high resolution still image frames in burst mode from one or more image sensors; downsampling the regular size video frames into reduced size video frames, wherein the reduced size frames have frame sizes smaller than the regular size video frames; processing the high resolution still image frames acquired during the burst mode using a high resolution still image pipeline; processing the reduced size video frames using a video pipeline, wherein the high resolution still image frames are processed concurrently with

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the reduced size video frames; and upsampling the reduced size video frames using motion estimation and information from the high resolution *still image* frames.

Independent claim 9 describes a joint video and still image pipeline for a video camera system. The joint video and still image pipeline comprises one or more image sensors capable of concurrently acquiring regular size video frames and high resolution still image frames in burst mode, wherein the regular size video frames are downsampled into reduced size video frames, wherein the reduced size frames have frame sizes smaller than the regular size video frames; a sensor controller capable of storing the regular size video frames and the high resolution still image frames acquired during the burst mode into a memory; and one or more processors capable of concurrently processing the reduced size video frames and the high resolution still image frames acquired during the burst mode, wherein the reduced size video frames are processed using a video pipeline, and the high resolution still image frames are processed using a high resolution still image pipeline, wherein the high resolution still image frames are processed concurrently with the reduced size video frames, and wherein the reduced size video frames are upsampled using motion estimation and information from the high resolution *still image* frames.

Independent claim 17 describes a computer readable medium providing instructions for concurrently processing digital video frames and high resolution still images in burst mode. The instructions comprise: acquiring regular size video frames and high resolution still image frames in burst mode from one or more image sensors; downsampling the regular size video frames into reduced size video frames, wherein the reduced size frames have frame sizes smaller than the regular size video frames; processing the high resolution still image frames acquired during the burst mode using a high resolution still image pipeline; processing the reduced size video frames using a video pipeline, wherein the high resolution still image frames are processed concurrently with the reduced size video frames; and upsampling the reduced size video frames using motion estimation and information from the high resolution *still image* frames.

Applicant respectfully submits that there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference to combine reference teachings, at least as to the combination of Wyman and Voss et al. Regarding the combination of Wyman and Voss et al., the Office

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Action alleges one of ordinary skill in the art would have no difficulty in providing the burst mode features in processing and storing video frames and high resolution still images concurrently as taught by Voss et al. for the joint video and still image pipeline system of Wyman for the same well-known capturing of high resolution still images while storing the video so that both the still image and the video images are captured concurrently without losing any information as claimed.

However, Wyman and Voss et al. use radically different methods for capturing high resolution still images, and Applicant submits that one skilled in the art would not attempt to combine the references as suggested in the Office Action. Wyman teaches the capture of motion video (at relatively low resolutions) on a motion video recording medium (such as magnetic tape 110) while video frames at a higher resolution suitable for still images are concurrently captured and temporarily stored in a frame buffer 204. In the time interval before a frame in buffer 204 is overwritten by a more recent frame, a user may take some action to save the frame as a still image. (Para. [0028]). In contrast, Voss et al. teaches the suspension of normal video mode while still image data is captured and saved by a memory element. (Para. [00255]). **One skilled in the art would have no motivation to provide Wyman with a burst mode feature as taught by Ross et al., as such a combination would require a substantial reconstruction and redesign of the elements of Wyman, as well as a change in the basic principle under which Wyman was designed to operate.** For example, the frame buffer 204 of Wyman be rendered unnecessary or useless for its intended purpose.

In addition, Applicant respectfully submits that Wyman, Voss et al., and Ueno et al., either alone or in combination, fail to teach or suggest all of the claim elements. Specifically, the references fail to teach or suggest *at least* the claim elements: “upsampling the reduced size video frames using motion estimation and information from the high resolution **still image** frames” (amended claim 1); “wherein the reduced size video frames are upsampled using motion estimation and information from the high resolution **still image** frames” (amended claim 9); and “upsampling the reduced size video frames using motion estimation and information from the high resolution **still image** frames” (amended claim 17).

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The Office Action explicitly acknowledges that Wyman fails to disclose upsampling the reduced video frames using motion estimation and information from high resolution still image frames. (See Office Action, para. 3, page 4, item (c)).

Voss et al. does not remedy the above-noted deficiency of Wyman. In particular, Voss et al. makes no teaching or suggestion regarding upsampling the reduced video frames using motion estimation and information from high resolution still image frames. The Office Action as much as acknowledges this position, as Voss et al. is cited as teaching concurrent processing of video frames and still image frames (item (a) in para. 2 of the Office Action), but is not cited as teaching either downsampling regular size video frames into reduced size video frames (item (b) in para. 2 of the Office Action), nor upsampling the reduced video frames using motion estimation and information from the high resolution still image frames (item (b) in para. 2 of the Office Action).

Despite the assertions set forth in the Office Action, Ueno et al. also fails to remedy the above-noted deficiencies of Wyman and Voss et al. In particular, Ueno et al. relates solely to a motion picture (i.e., video) coding apparatus. There is no teaching, suggestion or discussion that the apparatus of Ueno et al. includes or is useful with high resolution *still image* frames. **Applicant respectfully submits the Office Action is improperly equating the high resolution video frames of Ueno et al. with the claimed high resolution still image frames as set forth in the claims.** However, Ueno et al. specifically states that the high-resolution video frames are supposed to be, for example MPEG-2. (Col. 9, lines -8). As is known in the art, MPEG-2 is for the generic coding of moving pictures and associated audio and creates a video stream out of three types of frame data (intra frames, forward predictive frames and bidirectional predicted frames). This is clearly not the same as the high resolution *still image* frames as set forth in the claims. Accordingly, Ueno et al. cannot be said to teach or suggest **upsampling the reduced size video frames using motion estimation and information from high resolution still image frames** as set forth in the claims.

For *at least* these reasons, Wyman, Ross et al., and Ueno et al., alone or in combination, fail to teach or suggest all the claim limitations, and therefore fail to establish a *prima facie* case of obviousness. Accordingly, the rejection of amended independent claims 1, 9 and 17 under 35 U.S.C. §103(a) should be withdrawn.

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Claims 3, 4, 6, 8, 11, 12, 14, 15, 19 and 20 each depend, directly or indirectly, from one of amended independent claims 1, 9, or 17. For at least the reasons discussed above, independent claims 1, 9, and 17 are in allowable condition. Thus, dependent claims 3, 4, 6, 8, 11, 12, 14, 15, 19 and 20 are also in allowable condition by reason of their dependency from claims 1, 9, and 17. Accordingly, withdrawal of the rejection of claims 3, 4, 6, 8, 11, 12, 14, 15, 19 and 20 under 35 U.S.C. §103(a) should be withdrawn.

Claims 5 and 13 are rejected under 35 U.S.C. §103(a) as being unpatentable over Wyman, Voss et al., and Ueno et al. as applied to claims 1, 6, 8, 19, 14, 15, and 17 above, and further in view of Adolph et al. (U.S. Patent No 6,081,295).

Each of claims 5 and 13 depend, directly or indirectly, from one of independent claims 1 or 9. For at least the reasons discussed above, independent claims 1 and 9 are not made obvious by Wyman, Voss et al., and Ueno et al., either alone or in combination, and are in allowable condition. Thus, dependent claims 5 and 13 are also in allowable condition by reason of their dependency from claims 1 and 9. Accordingly, withdrawal of the rejection of claims 5 and 13 under 35 U.S.C. §103(a) should be withdrawn.

Claims 7 and 16 are rejected under 35 U.S.C. §103(a) as being unpatentable over Wyman, Voss et al., and Ueno et al. as applied to claims 1, 6, 8, 19, 14, 15, and 17 above, and further in view of Bittner et al. (U.S. Patent No. 6,330,400).

Each of claims 7 and 16 depend, directly or indirectly, from one of independent claims 1 or 9. For at least the reasons discussed above, independent claims 1 and 9 are not made obvious by Wyman, Voss et al., and Ueno et al., either alone or in combination, and are in allowable condition. Thus, dependent claims 7 and 16 are also in allowable condition by reason of their dependency from claims 1 and 9. Accordingly, withdrawal of the rejection of claims 7 and 16 under 35 U.S.C. §103(a) should be withdrawn.

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CONCLUSION

In view of the above, Applicant respectfully submits that pending claims 1, 3-9, 11-17, 19 and 20 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 1, 3-9, 11-17, 19 and 20 is respectfully requested.

The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any inquiry regarding this Amendment and Response should be directed to either Susan E. Heminger at Telephone No. (650) 236-2738, Facsimile No. (650) 852-8063 or Matthew B. McNutt at Telephone No. (612) 767-2510, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted,

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CERTIFICATE UNDER 37 C.F.R. 1.8: The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope address to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 19th day of December, 2005.

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